

S/N 10/700098

PATENT**REMARKS**

Favorable reconsideration of this application is respectfully requested in view of the above amendments and following remarks. Claim 1 is amended and supported for instance in Fig. 9 and Example 6. No new matter has been added. Claims 12 and 13 have been canceled. Claims 1-7, 10-11, 16, and 19-21 are pending.

Turning to the substance of the Office Action, claims 1-7, 10-13, 16, 19, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gyoten et al. (US 6,746,793), in view of Batzold (US 3,351,494) as further evidenced by March. Applicants respectfully traverse this rejection to the extent it is maintained.

Claim 1 is directed to a fuel cell that requires a catalyst layer comprising a mixture of catalyst carrying carbon and other particles, where the catalyst layer is obtained by chemically bonding a molecule comprising an ion-conducting functional group to a surface of the other particles and then mixing the other particles to the catalyst carrying carbon.

The references cited, however, do not disclose or suggest the features of claim 1. None of Gyoten et al., Batzold, or March disclose or suggest a catalyst layer comprising a mixture of catalyst carrying carbon and other particles, where the catalyst layer is obtained by chemically bonding a molecule comprising an ion-conducting functional group to a surface of the other particles and then mixing the other particles to the catalyst carrying carbon. In fact, none of the references disclose, in the formation of a catalyst layer, the use of catalyst carrying carbon as part of the mixture with the other particles as required by claim 1.

Gyoten et al. discloses using carbon particles as its substrate to which the catalyst is mixed with. First, the carbon particles do not satisfy the other particles feature of claim 1 as carbon is not an inorganic particle. Furthermore, Gyoten et al. merely mentions mixing a catalyst but does not disclose the use of catalyst carrying carbon to be mixed with other particles. Batzold does not remedy the deficiencies of Gyoten et al. While Batzold discloses other substrate materials such as mica and alumina, Batzold also only mentions a catalyst being mixed with such base substrate materials but not as a catalyst carrying carbon. March adds nothing further to cure such deficiencies of Gyoten et al.

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and Batzold, and Applicants do not concede its relevance to the claims. Consequently, claim 1 does not follow from the references cited and is patentable thereover.

Furthermore, since catalyst carrying carbon is used for forming the catalyst layer according to claim 1, catalyst particles dispersed and carried on carbon are electrically connected via carbon with one another. Such a structure can provide good electron conductivity. As claim 1 further requires the molecules comprising ion-conducting functional groups bonded to the other particles, electron conductivity can be improved to enhance the performance of electric power generation (see e.g. page 3, lines 18-27). Still further, the structure of the catalyst layer of claim 1 can help suppress the elution of the ion-conducting functional groups, as the molecules comprising ion-conducting functional groups are bonded to the other particles (see e.g. page 8, lines 20-24). As a result, an increased area of a three-phase zone can be achieved, which is an effective area of the catalyst (see e.g. page 3, lines 13-17). As this area becomes larger, a utilization factor of the catalyst increases, leading to a higher cell performance.

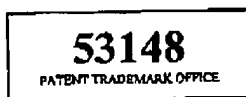
The references, however, would not arrive at the structure of claim 1 which can provide enhanced electron conductivity. For example, in a case where the base material of mica or alumina is substituted for the carbon substrate of Gyoten, the combination still fails to satisfy the feature of catalyst carrying carbon mixed with the other particles, i.e. inorganic particles. It is known that mica and alumina do not have the electron conductivity properties as carbon, and thus there is no reasonable suggestion that such a structure would have the enhanced electron conductivity among the catalyst particles as claim 1. Thus, any combination of Gyoten et al. and Batzold fails to satisfy claim 1, because the references at least fail to show or suggest a catalyst layer that uses catalyst carrying carbon to be mixed with other inorganic particles.

For at least the foregoing reasons, the references of record neither suggest the features of claim 1 nor recognize such benefits that may be enjoyed thereby. Applicants respectfully submit that claim 1 and its dependents are allowable over the references cited. Favorable reconsideration and withdrawal of the rejection are respectfully requested.

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In view of the above amendments and remarks, Applicants believe that the pending claims are in a condition for allowance. Favorable consideration in the form of a Notice of Allowance is respectfully solicited. If any questions arise regarding this communication, the Examiner is invited to contact Applicants' representative listed below.

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Respectfully submitted,

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